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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/524,614

11/02/2005

Jean I. Montagu

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EXAMINER

LAM, ANN Y

ART UNIT

PAPER NUMBER

1641

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/524,614	Applicant(s) MONTAGU ET AL.	
	Examiner Ann Y. Lam	Art Unit 1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2006.
- 2a) ☐ This action is **FINAL**.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 51-120 is/are pending in the application.
4a) Of the above claim(s) 52,64,69,71,95-103 and 117 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15,53-63,65-68,70,72-94,104-116 and 118-120 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 51-120 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/30/06, 2/16/05, 11/20/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Lack of Unity

This application contains the following inventions or groups of inventions which are not linked as to form a single inventive concept under PCT Rule 13.1.

Group I, claims 51-63, 65-68, 70, 72-94, 104-115, 118-120, drawn to a device for immobilizing material.

Group II, claims 97-101, drawn to a method of forming a device.

Group III, claims 102-103, drawn to a method of emission analysis.

The inventions listed as Groups I-III do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack a common special technical feature over the prior art for the following reasons:

The inventions of Groups I-III are linked together by the apparatus of Group I. However, the apparatus is known in the prior art as disclosed by the Brigati reference, EPO 0366241, which a nitrocellulose layer (col. 9, lines 5-15), which can be 2 to 50 um in thickness (col. 13, lines 33-39) for immobilizing materials (col. 10, lines 47-55).

Therefore the inventions I-III do not form a general inventive concept as they do not share a common special technical feature over the prior art.

The special technical feature of Group I is considered to be rigid support on which is a layer of nitrocellulose of less than 5 micron having an outer deposit-receiving region that has binding properties.

The special technical feature of Group II is considered to be a method of forming a polymer layer.

The special technical feature of Group III is a method of conducting an assay by applying an array of bio-materials, conducting an assay and reading the array by fluorescent detection.

Accordingly, the Groups are not so linked by the same or a corresponding special technical feature as to form a single general inventive concept.

It is noted that the species of nitrocellulose, solid layer and metal oxide (including tantalum oxide) and intervening layer that is opaque, were elected by Applicants in the response filed November 20, 2006. The above restriction requirement was subsequently found to be appropriate and during a telephone conversation with John N. Williams on December 19, 2006, a provisional election was made with traverse to prosecute the invention of Group I, claims 51-80 (along with the species elected in the response of November 20, 2006). Affirmation of this election must be made by applicant in replying to this Office action. Claims 52, 64, 69, 71, 95-103 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 51, 55-61, 72-75, 79-82, 85, 86, 89-92, 104-111 are rejected under 35 U.S.C. 102(b) as being anticipated by Brigati, EPO 0366241.

As to claims 51, 72, 75, 79, 80, 89, 92, 104, 105, Brigati teaches a transparent planar surface with a rigid polymer coating, and an adsorbent polymer layer that is a cellulosic polymer (col. 2, lines 37-50). The cellulosic polymer is disclosed as a nitrocellulose layer (col. 9, lines 5-15), which can be 2 to 50 um in thickness (col. 13, lines 33-39).

As to claims 55-59, 81-82, and 108-110, the nitrocellulose film is used for immobilization of material and because Applicants are claiming a device, rather than a method of making, the methods of treatment are not considered to be part of the structure of the device, and there is no indication that such treatment would make a surface different from that disclosed by Brigati.

As to claims 60, 85, 107, the nitrocellulose film is a dried residue of a solution of nitrocellulose and a volatile solvent (col. 13, lines 33-45).

As to claims 61, 86, 108, the nitrocellulose is considered to be a drawn coating because it is applied to the device as a coating.

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As to claims 73, 74, 90, 81, 106, the surface (slide) is spotted with samples that is DNA (col. 10, lines 47-53).

As to claim 111, an adhesive applied between the nitrocellulose and glass surface (col. 9, lines 5-15) is considered to be the intervening layer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 53, 54, 87, 88, 104 and 116 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brigati, EPO 0366241, in view of McMahon et al., 5,310,650.

Brigati discloses the invention substantially as claimed (see above), except for the nitrocellulose being less than about 1 micron in thickness (claims 53 and 87), or between about 0.1 and 0.5 micron in thickness (claims 54 and 88). (Brigati teaches that the nitrocellulose is 2 to 50 um in thickness, see col. 13, lines 33-39).

However, McMahon et al. teach that a sheet of nitrocellulose membrane can be 0.45 micron to which DNA can be applied (col. 11, line 67 – col. 12, line 25). It would have been obvious to one of ordinary skill in the art at the time the invention was made

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to provide a nitrocellulose membrane of 0.45 micron in the Brigati device because McMahon et al. teach that nitrocellulose of that thickness can be used to immobilize molecules such as DNA, and moreover, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (MPEP 2144.05 IIA, citing *In re Aller*, 105 USPQ 233). In this case, Brigati discloses the general conditions of the claims, including a nitrocellulose layer of as small as 2 um in thickness, and 0.45 um is an optimum or workable thickness, and McMahon et al. teach that such thinness of nitrocellulose is still capable of forming a sheet for immobilizing DNA.

Claim 76-78 and 119 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brigati, EPO 0366241, in view of McMahon et al., 5,310,650, and further in view of in view of Richardson, 6,381,013.

Brigati discloses the invention substantially as claimed (see above), except for the nitrocellulose being less than about 1 micron in thickness, or between about 0.1 and 0.5 micron in thickness. (Brigati teaches that the nitrocellulose is 2 to 50 um in thickness, see col. 13, lines 33-39).

However, McMahon et al. teach that a sheet of nitrocellulose membrane can be 0.45 micron to which DNA can be applied (col. 11, line 67 – col. 12, line 25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a nitrocellulose membrane of 0.45 micron in the Brigati device because

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McMahon et al. teach that nitrocellulose of that thickness can be used to immobilize molecules such as DNA, and moreover, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (MPEP 2144.05 IIA, citing *In re Aller*, 105 USPQ 233). In this case, Brigati discloses the general conditions of the claims, including a nitrocellulose layer of as small as 2 μm in thickness, and 0.45 μm is an optimum or workable thickness, and McMahon et al. teach that such thinness of nitrocellulose is still capable of forming a sheet for immobilizing DNA.

Also, Brigati does not disclose an intervening layer being opaque to light, or being a metal oxide, or specifically tantalum oxide.

However, Richardson teaches that where it is desired to use a slide in the UV portion of the spectrum, a UV contrast enhancement for the slide can comprise thin films of tantalum oxide or other suitable materials as will occur to those of skill in the art (col. 7, lines 46-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a tantalum oxide film on the Brigati slide because Richardson teaches that such a film provides the benefit of UV contrast enhancement, as would be desirable where UV portion of the spectrum is used for analysis. Tantalum oxide is substantially opaque (as is disclosed by Applicants in the specification).

Claims 62, 63, 65-68, 70, 83, 84, 93, 94, 112-114, 118, 120 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brigati, EPO 0366241, in view of Richardson, 6,381,013.

Brigati discloses the invention substantially as claimed (see above), except for the an intervening layer being opaque to light, or being a metal oxide, or specifically tantalum oxide.

However, Richardson teaches that where it is desired to use a slide in the UV portion of the spectrum, a UV contrast enhancement for the slide can comprise thin films of tantalum oxide or other suitable materials as will occur to those of skill in the art (col. 7, lines 46-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a tantalum oxide film on the Brigati slide because Richardson teaches that such a film provides the benefit of UV contrast enhancement, as would be desirable where UV portion of the spectrum is used for analysis. Tantalum oxide is substantially opaque (as is disclosed by Applicants in the specification).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann Y. Lam whose telephone number is 571-272-0822. The examiner can normally be reached on Mon.-Fri. 10-6:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

 11/7/07

ANN YEN LAM
PATENT EXAMINER